TOYKKA, M.A., dotsent; SAKHAROVA, Ye.A.

Zinc content of soils in Sortavala District. Uch. zap. Petrozav. gos. un. 12 no.3:92-96 '64. (MIRA 19:1)

1. Kafedra neorganicheskoy khimii Petrozavodskogo gosudarstvennogo universiteta imeni O.V. Kuusinena.

TOYKKA, M.A., dotsent; LAZAREVA, Ye.A.

Copper and manganese content of soils in Sortavala District.
Uch. zap. Petrozav. gos. un. 12 no.3:97-99 '64.
(MIRA 19:1)

1. Kafedra neorganicheskoy khimii Petrozavodskogo gosudarstvennogo universiteta imeni O.V. Kuusinena.

TOYKKA, M A., dotsent; POTAKHINA, L.N.

Boron and molybdenum in soils of Sortavala District. Uch. zap. Petrozav. gos. un. 12 no.3:100-101 '64. (MIRA 19:1)

1. Kafedra neorganicheskoy khimii Petrozavodskogo gosudarstvennogo universiteta imeni O.V. Kuusinena.

TOYKKA, M.A., dotsent; POPOVA, A.P.; POTAKHINA, L.N.

Content of total and available manganese in soils of Kondopoga and Medvezh'yegorsk Districts. Uch. zap. Petrozav. gos. un. 12 no.3:102-110 '64. (MIRA 19:1)

1. Kafedra neorganicheskoy khimii Petrozavodskogo gosudarstvennogo universiteta imeni O.V. Kuusinena.

J

COUNTRY : USSR
CATEGORY : Soil Science. Soil Genesis and Geography.

ABS. JOUR. : RZhBiol., No. 3 1959, No. 10658

AUTHOR : Toykka, M. A.
INST. : Petrozavodsk University
TITLE : Comparison of Shungite Soils with the Principal Soil Types of USSR

ORIG. PUB. : Uch. zap. Petrozavodskogo un-ta, 1956, 7, No. 3, 117-137

ABSTRACT : Unusual shungite soils("Olonetz chernozems") develop in Zaonezh'ye on black carbon shales. In color these soils are similar to dhernozems of the upper humous horizons but sharply differ from the latter in the color of soil forming rocks. In shungite soils, the genetic horizons are not differentiated. In regard to the reserves of humus in the 1st layer, these soils are intrazonal in comparison with the rest of the soil types. In the maximum amount of humus in the 1cm layer of arable horizon (10.5% tons/ha), these soils are close to thick chernozems; in the

CARD: 1/2

AGRICULTURY :
GEOGRAPHY :

PER. JOUR. : RZhBiol., No. 1959, No. 10658

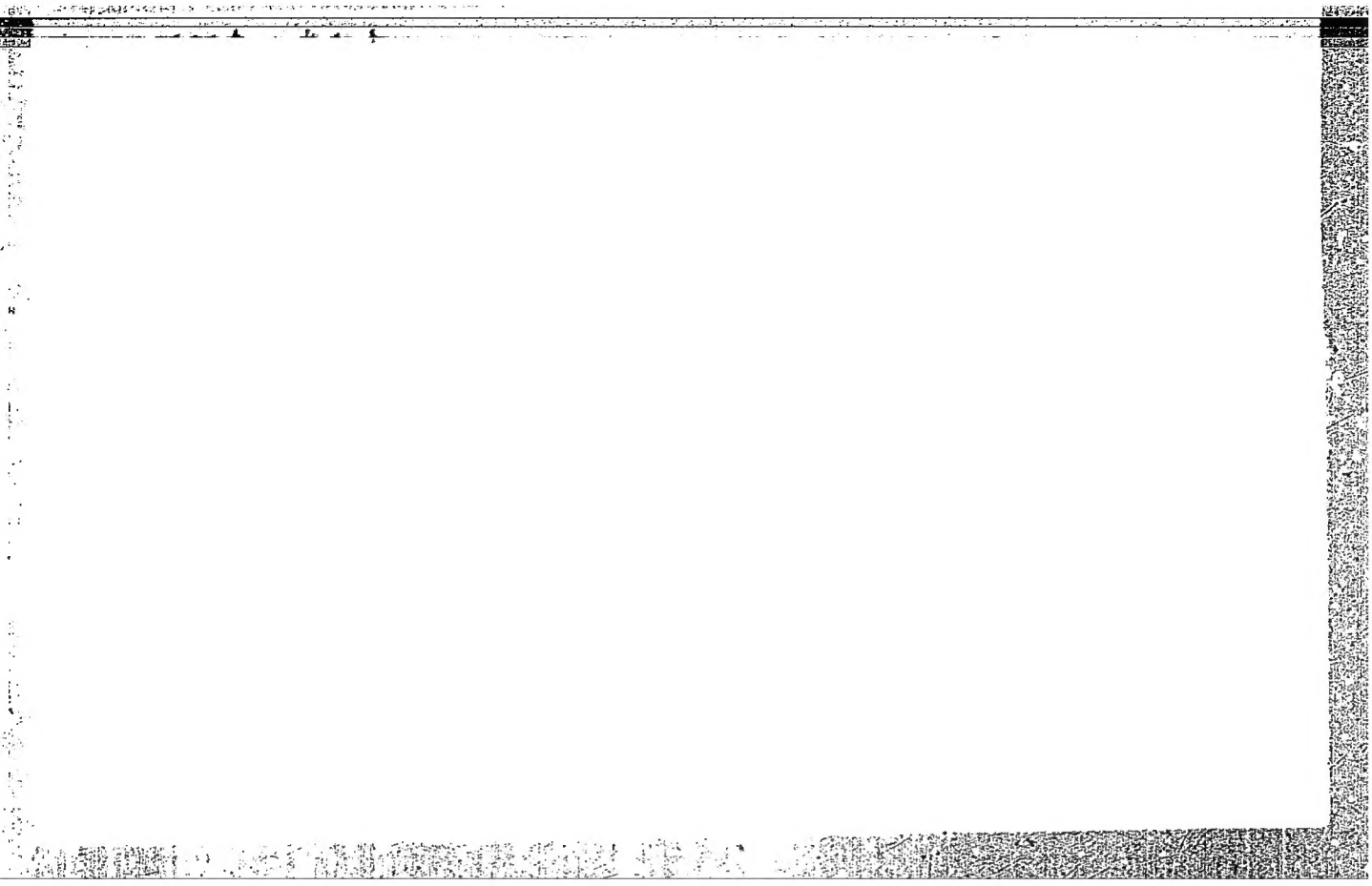
AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : minimum amount of humus (5.31 tons/ha) they are close to forest-steppe soils. Data are cited on the determination of the water properties of shungite soils. Unlike podzolic soils, shungite soils contain a large amount of mobile P_2O_5 in all soil horizons and a high content of total P_2O_5. Bibliography of 27 titles. -- F.I. Shchurova

CARD: 2/2

13



TOYKKA, M.A., dotsent

Trace element content of plants in turf-Podzolic and schungite soils. Uch. zap. Petrozav. gos. un. 12 no.3:57-63 '64.

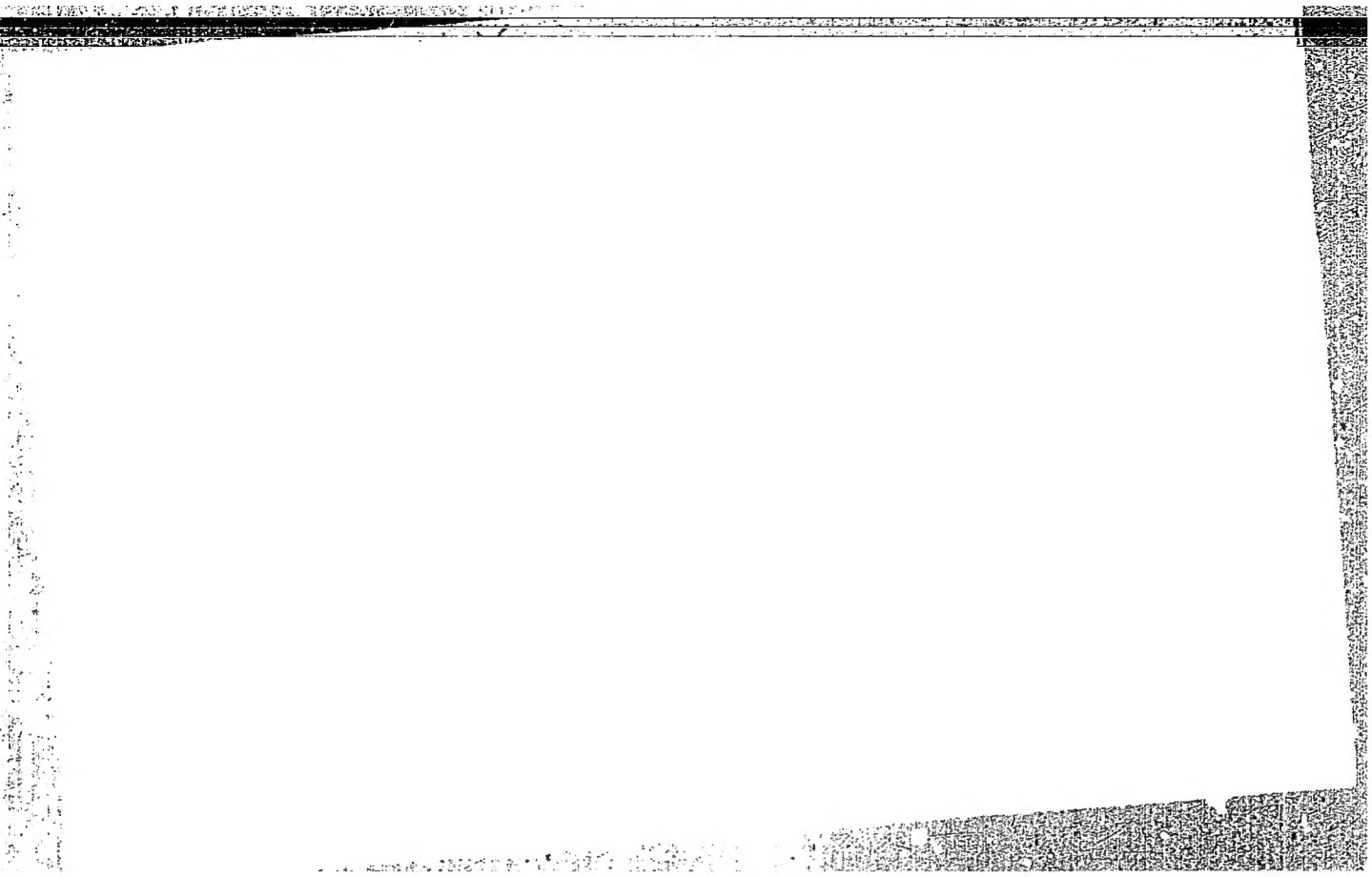
Molybdenum content of soils and plants in the Shuya region and the requirements in molybdenum fertilizers. Ibid.:82-87 (MIRA 19:1)

1. Kafedra neorganicheskoy khimii Petrozavodskogo gosudarstvennogo universiteta imeni O.V. Kuusinena.

TOYBIN, V.A., inzhener, nauchnyy redaktor; BEGAK, B.A., redaktor izdatel'stva; EL'KINA, E.M., tekhnicheskiy redaktor

[Album of designs for wire suspension scaffolding used in building brick walls and finishing work on building frames with a height up to 50 meters] Al'bom chertezhei inventarnykh podvesnykh strunnykh lesov dlia kamennoi kladki sten i otdelochnykh rabot v karkasnykh zdaniiakh vysotoi do 50 m. Moskva, Gos.izd-vo lit-ry po stroit. i arkhit., 1957. 43 p. (MLRA 10:7)

1. Akademiya stroitel'stva i arkhitektury SSSR. Nauchno-issledovatel'skiy institut organizatsii i mekhanizatsii stroitel'stva.
(Scaffolding)



APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001756420012-3"

TOYDZE, I.

Children As Artists

"Creative work of youth." Sov. zhen., 8, No. 3, 1952.

9. Monthly List of Russian Accessions, Library of Congress, August 1952 1953, Uncl.

Toyev, I. S.

H-7

Category : USSR/Electronics - Gas Discharge and Gas-Discharge Instruments

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1720

Author : Toyev, I.S.
Title : Procedure for Calculation of AC Electric Arc

Orig Pub : Tr. Mosk. energ. in-ta, 1956, vyp. 16, 16-31

Abstract : No abstract

Card : 1/1

TOYGOMBAYEV, D.

Let's improve the training of rural machine operators. Prof.-tekh. obr. 20 no.4:7-8 Ap '63. (MIRA 16:5)

1. Nachal'nik Glavnogo upravleniya professional'no-tekhnicheskogo obrazovaniya pri Sovete Ministrov Kirgizskoy SSR.
(Farm mechanization—Study and teaching)

TOYKKA, M.A.

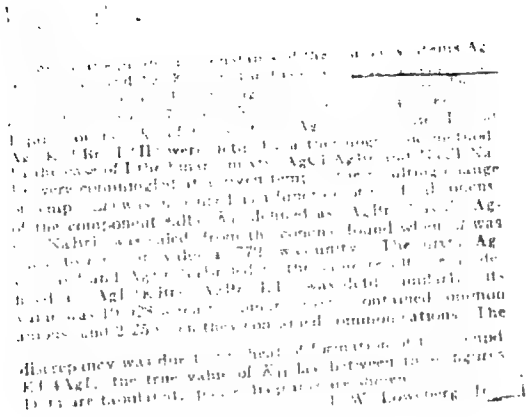
Dark-colored (schungite) soils of the Karelo-Finnish S.S.R. Trudy Kar.-fin.gos.un. 6 no.3:131-148 '54. (MLRA 10:2)

1. Kafedra khimii.
(Karelia--Soils)

TOYKKA, M.A.

Physical and chemical properties of the dark-colored (schungite) soils of the Karelo-Finnish S.S.R. Trudy Kar.-fin.gos.un.6 no.3: 149-182 '54. (MLRA 10:2)

1. Kafedra pochvovedeniya.
(Karelia--Soils)



MARTYNOV, V.S., kand.sel'skokhozyaystvennykh nauk; TOYMETOV, N.I., zootekhnik

Some problems in breed work. Zhivotnovodstvo 21 no.2:12 F '59.
(MIRA 12:3)

1. Mariyskaya sel'skokhozyaystvennaya opytnaya stantsiya..
(Dairy cattle)

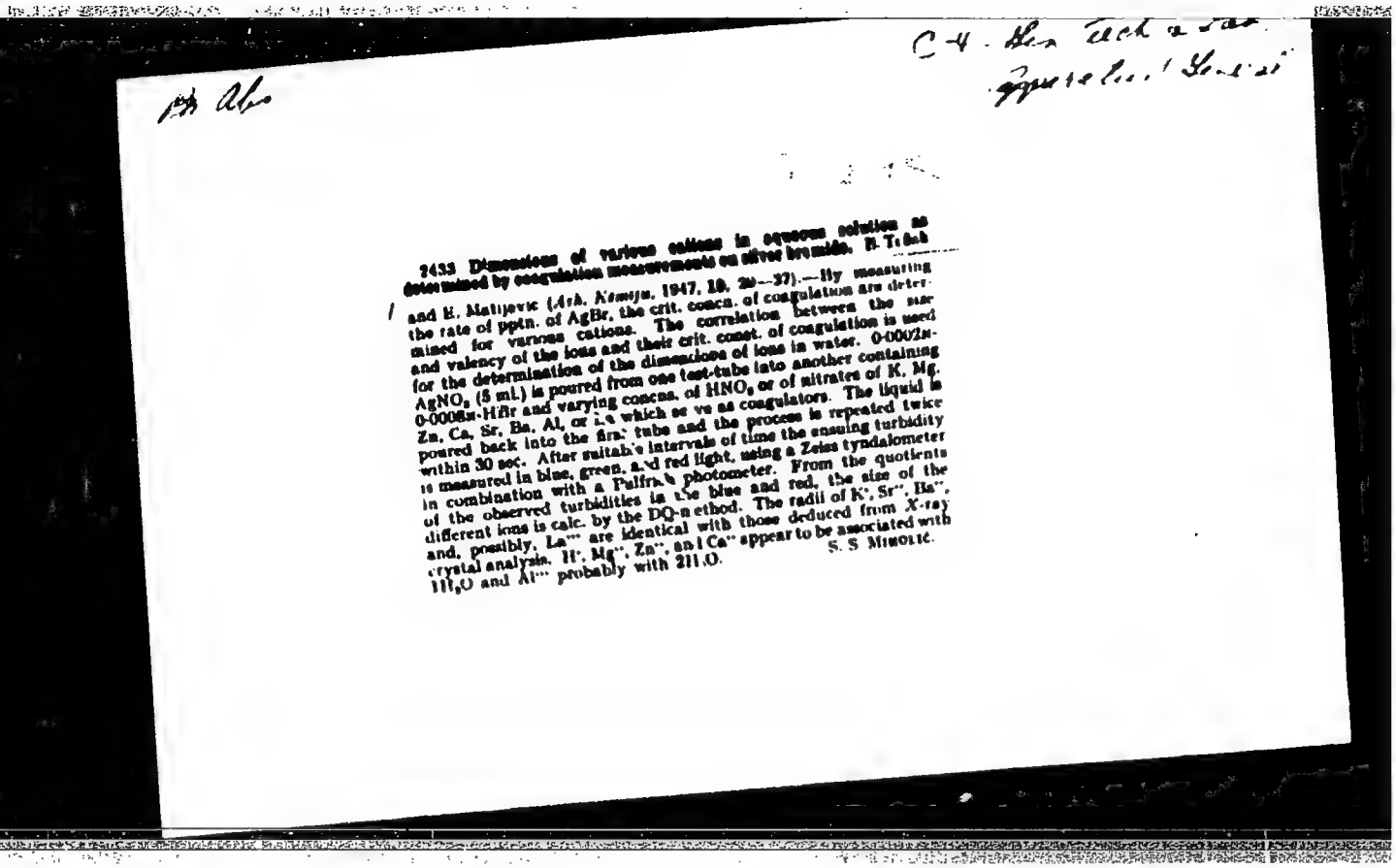
TOYSHIBEKOV, M.

Characteristics of the internal organs of lambs at various stages after birth. Izv. AN Kazakh. Ser. biol. nauk no. 3:25-31 '63. (MIRA 17:9)

TOYSHIBEKOV, M.

Changes in the structure of the bony tissue in lambs as related to the season of birth. Trudy Inst. eksp. biol. AN Kazakh. SSR 11:204-218 '65. (MIRA 18:10)

TOYVOO, Tsobig, Doc Bio Sci--(dis) "Age-related morphology of the native Mongol cattle." Len, 1958. 30 pp (Len Vet Inst of the Min of Agr USSR), 150 copies (KL,45-58, 111)



2433 **Dimensions of various cations in aqueous solution as determined by coagulation measurements on silver bromide.** R. Tuš and E. Matijević (*Arh. Kemiju*, 1947, 19, 29—37).—By measuring the rate of pptn. of AgBr, the crit. concn. of coagulation are determined for various cations. The correlation between the size and valency of the ions and their crit. coagul. of coagulation is used for the determination of the dimensions of ions in water. 0·0002*M*-$AgNO_3$ (5 ml.) is poured from one test-tube into another containing 0·0008*M*-HBr and varying concns. of HNO_3 or of nitrates of K, Mg, Zn, Ca, Sr, Ba, Al, or La which serve as coagulators. The liquid is poured back into the first tube and the process is repeated twice within 30 sec. After suitable intervals of time the ensuing turbidity is measured in blue, green, and red light, using a Zeiss tyndalometer in combination with a Pulfrich photometer. From the quotients of the observed turbidities in the blue and red, the size of the different ions is calc. by the DQ-method. The radii of K^+, Sr^{++}, Ba^{++}, and, possibly, La^{+++} are identical with those deduced from *X*-ray crystal analysis. H^+, Mg^{++}, Zn^{++}, and Ca^{++} appear to be associated with $1H_2O$ and Al^{+++} probably with $2H_2O$.

S. S. Miholjić.

KACZKOWSKI, J.; TOZEJKO-TOCZKO, M.

Bacteria decomposing tropane alkaloids. Acta microb.polon 9 no.2: 173-179 '60.

1. Z Katedry Biochemii Szkoly Glownej Gospodarstwa Wiejskiego i z Zakladu Biochemii Roslin Instytutu Biochemii i Biofizyki PAN w Warszawie
(PSEUDOMONAS metab.)
(ALKALOIDS metab.)

TOZHETSKI, Z.

Tuberculosis of the tonsils. Suvrem.med.,Sofia no.9/10:15-25 '59.

1. Iz Katedrata po patologichna anatomiia pri Med. akademiia v Lodz - Polsha. Zav.katedrata: prof. A. Prushchinski.
(TUBERCULOSIS)
(TONSILS dis.)

TOZI, N.

The ancient method of fishing on Lake Dojran. In English. p.14.
THROUGH YUGOSLAVIA. (Turisticki savez Jugoslavije) Beograd. Vol. 4, no. 2, 1955.

SOURCE: East European Accessions List, (EEAL), Library of Congress
Vol. 5, No. 6, June 1956

TOZI, N.

The eels of Lake Ohrid. In English. p. 50; THROUGH YUGOSLAVIA. (Turisticki savez Jugoslavije) Beograd; Vol. 5, no. 1/2, 1956.

SOURCE: East European Accessions List (EEAL), Library of Congress, Vol. 5, No. 12, December 1956.

TOZHINA, A.G.; ZEZYULYA, N.V.

Manufacturing guide rolls. Obm.tekh.opyt.[MLP] no.20: 22-23 '56. (MIRA 12:11)
(Sewing machines)

CZECHOSLOVAKIA/Pharmacology, Toxicology. Chemotherapeutical Preparations V-7

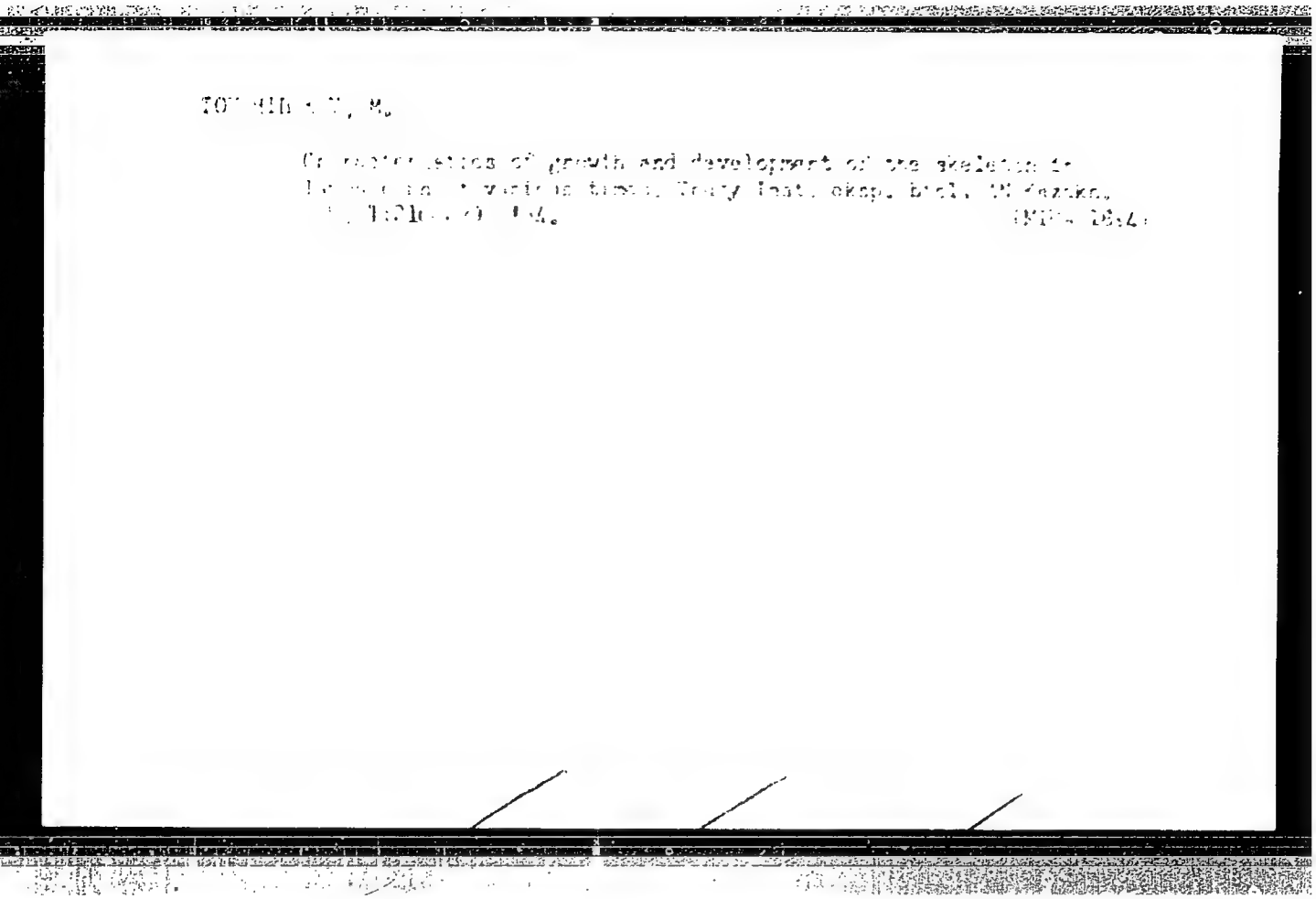
Abs Jour : Ref Zhur - Biol., No 5, 1958, No 23460

Author : Toznetinsky M.
Inst : Not Given
Title : The Results of Izoniazid Application During 2½ Years of Therapy of Skin Tuberculosis in Out-Patient Departments

Orig Pub : Ceskoslov. dermatol. 1957, 32, No 3, 137-145

Abstract : Isoniazid was used in the treatment of 298 patients, afflicted with avrious forms of skin tuberculosis. The average daily dose was 5 mg/kg; during the treatment as a whole, 48.73 g of isoniazid was used. Clinical recovery was obtained in 199 patients in about 5.28 months. In 8 patients the treatment was ineffective. Sixty two patients did not complete the treatment for various reasons. The author considered isoniazid the most effective and the fastest acting agent in the treatment of skin tuberculosis.

Card : 1/1



SOV/112-58-2-2179

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1958, Nr 2, p 62 (USSR)

AUTHOR: Sinel'nikov, Ye. M., and Tozoni, O. V.

TITLE: An Experimental and Analytical Method for the Design of a Magnetic Field in the Air Gap of DC Electric Machinery
(Eksperimental'no-analiticheskiy metod rascheta magnitnogo polya v vozdushnom promezhutke elektricheskikh mashin postoyannogo toka)

PERIODICAL: Tr. Novocherk. politekhn. in-ta, 1956, Vol 43/57, pp 7-28

ABSTRACT: A method is set forth for the experimental and analytical design of an air-gap magnetic field in DC machinery. The method is illustrated by an example of the design of the main-pole field of a DC machine.

Card 1/1

TOZONI, O. V. Cand Tech Sci -- (diss) "Calculation of the magnetic field of direct-current machines." Novocherkassk, 1957. 25 pp with charts (Min of Higher Education USSR. Novocherkassk Polytechnic Inst im Sergo Ordzhonikidze, Chair of "Theoretical and General Electrical Engineering"), 180 copies (KL, 3-58, 98)

8(0), 16(0) SOV/112-59-2-2328

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 2, p 6 (USSR)

AUTHOR: Tozoni, O. V.

TITLE: Electrical Simulation of Functions That Conformally Transform Simply-Connected and Doubly-Connected Regions on an Infinite Strip (Elektricheskoye modelirovaniye funktsiy, konformno otobrazhayushchikh odnosvyaznyye i dvukhsvyaznyye oblasti na beskonechnuyu polosu)

PERIODICAL: V sb.: Mezhvuz. konferentsiya po primeneniyu modelirovaniya v elektrotekhn. zadachakh i matem. modelirovaniya, M., 1957, p 131

ABSTRACT: A method is suggested for defining the physical quantity (the current-field complex potential) on a conducting model that has the form of a specified simply-connected region. The physical quantity is simultaneously a function that transforms the region conformally on an infinite strip. If the region is polygonal, the above method serves to determine the constants in the Christoffel-Schwartz formula.

Card 1/1

TOZONI, Oleg Valentinovich.

Magnetic field of direct current machines. Izv. vys. ucheb. zav.; elektromekh. 1 no.3:12-29 '58. (MIRA 11:6)

1. Starshiy prepodavatel' kafedry teoreticheskoy i obshchey elektrotekhniki Novocherkasskogo politekhnicheskogo instituta.
(Electric machinery—Magnetic properties)

TOZONI, O.V.

Modeling a function which infinitely, valently and conformally maps a doubly connected domain on a strip. Izv. vys. ucheb. zav.; elektromekh. 1 no.5:14-22 '58. (MIRA 11:8)
(Magnetic fields--Models) (Conformal mapping)

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E041/E235

16.6800

AUTHOR: Tozoni, O. V., Candidate of Technical Sciences, Docent

TITLE: The Resolving Power of an Analogue Integrator for Solving the Dirichlet-Neuman Problem in a Strip

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1960, Nr 5, pp 16-39 (USSR)

ABSTRACT: It is recalled that the present method, described in an earlier paper (Ref 1) is not unique in providing a solution but is particularly useful because the normal derivative at the boundary is also found. The present article examines the accuracy of the method. The basic arrangement, shown in Fig 1, consists of a thin manganin strip of aspect ratio 10 with substantial brass contacts soldered to the narrow ends. Along one long edge there are specially-shaped teeth into which current may be fed from a bank of rheostats. The strip itself is very uniform, the variation in surface conductivity being less than 0.5%. Three main sources of error investigated are: the finiteness of the strip; the discrepancy between the actual current distribution from the teeth and that required; the effect of voltage drop in the strip on current distribution. Fig 2

Card 1/3

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The Resolving Power of an Analogue Integrator for Solving the Dirichlet-Neuman Problem in a Strip

shows how the sampling of the complete function over a finite length results in a discontinuity in the gradient of the function. The absolute error in the value of the normal derivative is given by Eq (3). If the working section of the strip is assumed to exclude at each end a length equal to twice the strip width then the error is very small (Eq (4)). Because the number of teeth used to introduce the transverse current is finite it is impossible to guarantee the correct current distribution close to the base of the teeth. The normal derivative in this region is measured by the drop in voltage between contacts of a double-probe. The influence of various laws of variation of current with distance along the strip upon the error in determining the derivative is found for four cases: constant, linear, parabolic and cubic. In the first two cases an effective width can be specified within which there is negligible error. In the latter two cases there are similar but less explicit criteria. The accuracy with which the

Card 2/3

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E041/E235

The Resolving Power of an Analogue Integrator for Solving the Dirichlet-Neuman Problem in a Strip

normal derivative may be measured can be increased by subtracting a constant component from the current distribution, as shown in Fig 6. It is also shown to be possible, using the principle of superposition, to use the integrator with problems involving a first-order discontinuity at the boundary. The current flowing through the teeth into the strip must be allowed for in estimating voltage drops on the strip. Using such a correction the residual error is less than 0.4% and negligible. There are 7 figures, 4 appendices on each of the current-variation laws and 4 Soviet references.

ASSOCIATION: Kafedra teoreticheskoy i obshchey elektrotekhnikiy Novocherkasskiy politekhnicheskiy institut (The Chair of Theoretical and General Electrical Engineering, Novocherkassk Polytechnical Institute)

SUBMITTED: January 17, 1960

L 11638-66 EWT(1) GG

ACC NR: AR5018673 UR/0196/65/000/007/A008/A008
538.311

SOURCE: Ref. zh. Elektrotekhnika i energetika, Abs. 7A57

AUTHOR: Tozoni, O.V.; Petrushenko, Ye.I.

TITLE: Calculating the field of electromagnetic devices with the help of a digital computing machine

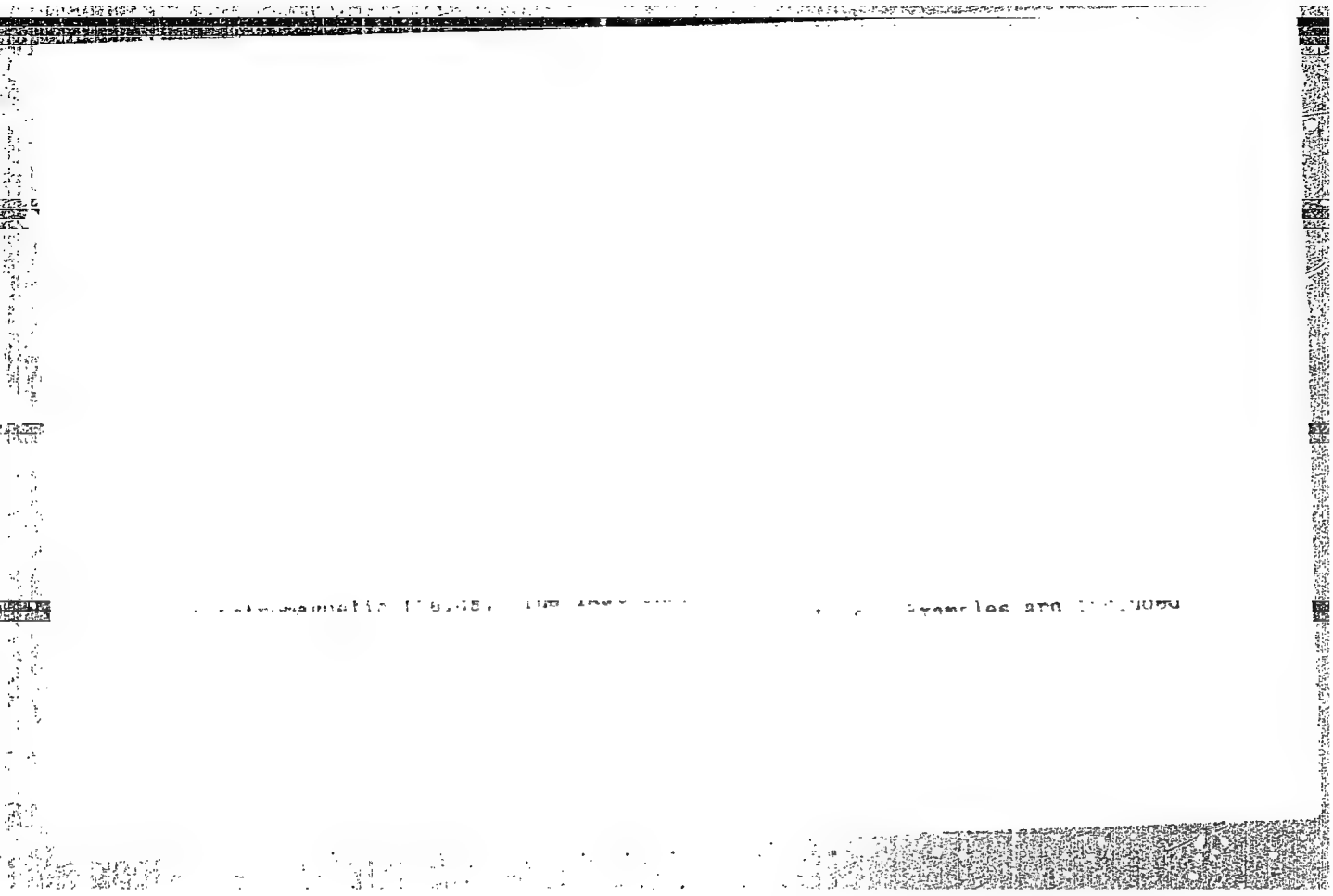
CITED SOURCE: Sb. Kommunal'n. kh-vo. Vyp. 2. Kiyev, Budivel'nyk, 1964, 3-13

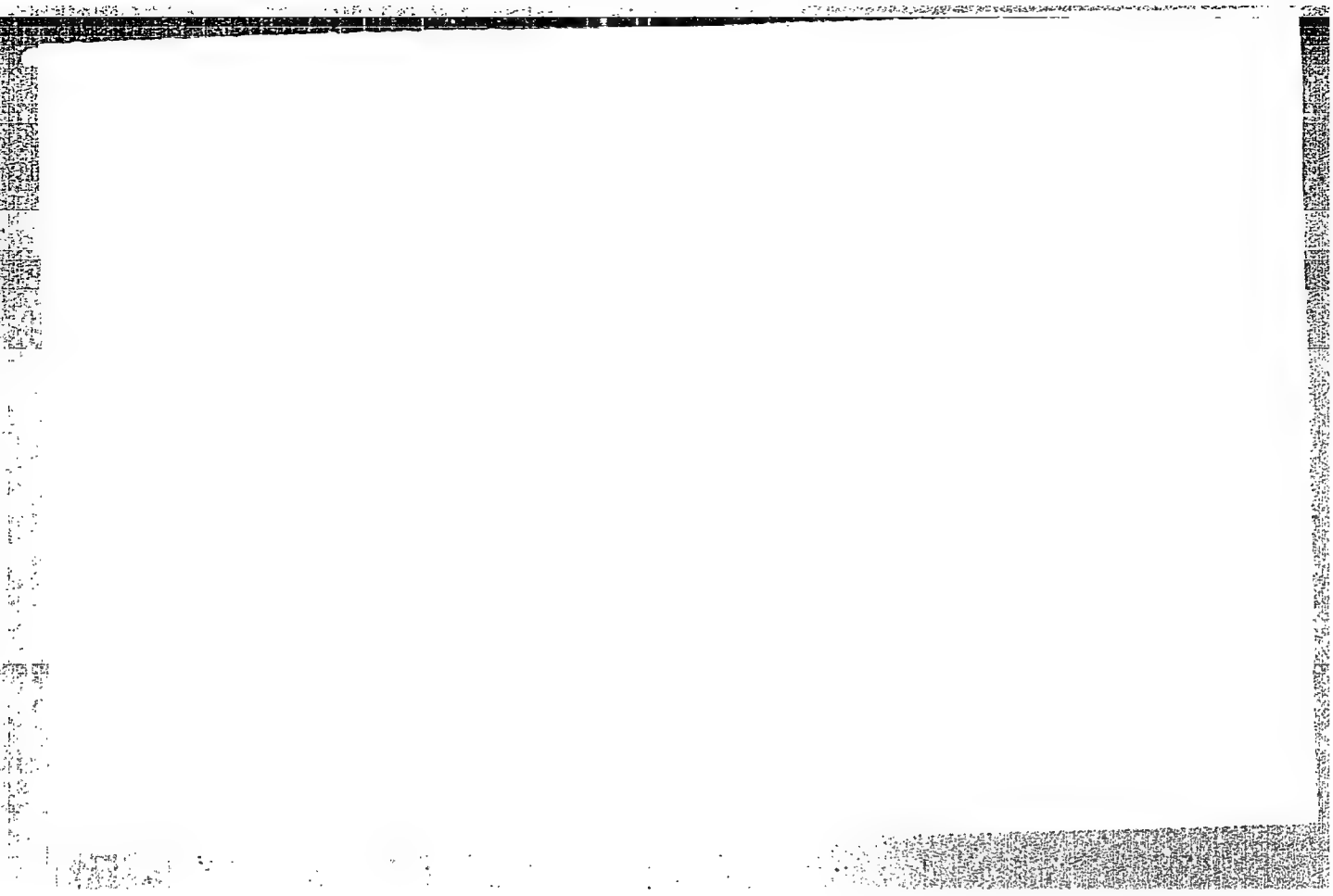
TOPIC TAGS: magnetic field, computer, electromagnetic field, magnetic permeability, steel

TRANSLATION: A study was made of the algorism of a field calculation in electric and technical devices, convenient to realize on a digital computing machine and depending on two spacial coordinates only, i.e., plane. The magnetic permeability is considered to be permanent. The calculation of the field in a linear and magnetically heterogeneous media is reduced to the calculation of a field in a vacuum by using the G.A. Grinberg method. 4 illustrations and 4 references. I. Tikhomirov

SUB CODE: 14, 09

Card 1/1





APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001756420012-3"

TOZONI, Oleg Valentinovich, kand. tekhn. nauk, dotsent, starshiy nauchnyy sotrudnik

Calculation of static fields in nonlinear media. Izv. vys. ucheb. zav.; elektromekh. 7 no.8:915-926 '64.
(MIRA 17:10)

1. Institut kibernetiki AN UkrSSR.

TOZONI, Oleg Valentinovich; PUKHOV, G.Ye., otv. red.; MEL'NIK, T.S., red.

[Mathematical models for the calculation of electrical and magnetic fields] Matematicheskie modeli dlia rascheta elektricheskikh i magnitnykh polei. Kiev, Naukova dumka, 1964. 301 p. (MIRA 17:8)

1. Chlen-korrespondent AN Ukr.SSR (for Pukhov).

TOZONI, O.V.

Modeling the field of currents in a network of underground structures. Mat. mod. i elek. tsepi no.1:97-113 '63. (MIRA 16:11)

TOZONI, O.V.

Possibility of using electrical simulation for calculating the distribution of sinusoidal current in conductors. Izv. vys. ucheb. zav.; elektromekh. 5 no.2:119-128 '62. (MIRA 15:3)
(Electric power distribution)

TOZONI, Oleg Valentinovich, kand.tekhn.nauk, dotsent, starshiy nauchnyy sotrudnik

Electric integrator for simulating a special solution of Poisson's equation. Izv. vys. ucheb. zav.; elektromekh. 4 no.3:3-16 '61. (MIRA 14:7)

1. Vychislitel'nyy tsentr Akademii nauk USSR.
(Electromechanical analogies)
(Differential equations)
(Electric machinery)

S/144/62/000/002/001/007
D289/D301

9,1400

AUTHOR: Tozoni, Oleg Valentinovich, Candidate of Technical Sciences, Docent

TITLE: Possibilities of computing the distribution of sinusoidal current in conductors using electrical model techniques

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Elektromekhanika, no. 2, 1962, 119 - 128

TEXT: The Fredholm equation of the second kind can be used to show the distribution of sinusoidal current in conductors:

$$\dot{E}_0(Q) = \dot{E}(Q) - i\lambda \int_D \dot{E}(M) \log r_{QM}\, dM \qquad (1)$$

where $\dot{E}_0 = \frac{\dot{u}}{l}$; $\dot{E}(Q) = \frac{\dot{\delta}(Q)}{\gamma}$; $\lambda = \mu\gamma f$; $i = \sqrt{-1}$;

$\dot{u}$ - vector potential acting on the length l of the conductor; $\dot{E}$ - internal electric field vector in the conductor; δ - vector current

Card 1/3

Possibilities of computing the ...

density; μ - permeability and γ = specific resistivity of the conductor; f - frequency; r_{QM} - distance between points Q and M in section D; dM - element of area in section D. Substituting $E = E_a + iE_p$ and eliminating imaginary parts,

$$E_a(Q) - E_o(Q) = -\lambda^2 \int_D E_a(N)\, K(Q, N)\, dN \qquad (4)$$

where $$K(Q, N) = \int_D \log r_{MN} \log r_{QM}\, dM.$$

The solution of Eq. (4) is difficult since it involves repeated surface integration and can be obtained with a model representing a boundless conducting plane. The model called an electro-integrator, consists of two sheet metal discs separated by insulation and spot-welded together at the periphery to which point sources of current are attached. Eq. (4) rewritten as

$$E_o(Q) = E_a(Q) + \lambda^2 KE_a = AE_a$$

Possibilities of computing the ...

where $$KE_a = \int_D E_a(N)K(Q, N)dN$$

can be 'set' on the model. The application of the operator K is equivalent to setting of current on the model $\sim 2\pi\gamma E_a$, measurement of U, setting of current $\sim 2\pi\gamma U$. Successive operations are equivalent to K^n and the solution of Eq. (4) must form convergent Neumann series of K^nE_a. When the conductor section greatly exceeds the penetration of electromagnetic wave, the Neumann series may not converge and this is illustrated by a numerical example for a copper conductor and an aluminum conductor. Using functional analysis and Tchebychev polynomials the author evolves an alternative equation for use in such case. There is 1 figure.

ASSOCIATION: Vychislitel'nyy tsentr AN USSR (Computer Center AS UkrSSR)

SUBMITTED: April 28, 1961

Card 3/3

28198

9.7200 1132 1538 1327 1103 S/194/61/000/005/015/078
24 4100 D201/D303

AUTHOR: Tozoni, O.V.

TITLE: Analogue computer for evaluating stresses during the machining of shafts with complex cross sections

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 5, 1961, 15, abstract 5 B95 (Tr. 1-y Mezhvuz. nauchno-tekhn. Konferentsii po elektr. modelirovaniyu zadach. stroit. mekhan., soprotivleniya materialov i teorii uprugosti. B.M. Novocherk. politekhn. in-t, 1960, 80-85)

TEXT: A description is given of an electrical analogue whose basic element consists of a manganese strip 150 x 1500 mm cut from a sheet 0.35 mm thick. One of the sides of the rectangular strip is used to provide the boundary values of the function by means of current determined by 100 variable resistors. The circuit uses the analogue of the conformal transformation of the analyzed region

Card 1/2

Analogue computer...

into an infinite strip. The unknown harmonic function is simulated by the current function and its bounds by the potentials which permits solving the Dirichlet and Neumann problem in single- and double-bounded domains. This is because not only the required harmonic function is being determined, but also its normal derivative at the boundary of the domain. 3 figures. 3 references. [Abstracter's note: Complete translation]

Card 2/2

20901

S/144/61/000/003/001/004
E194/E435

24,2300 (1127, 1158, 1103)

AUTHOR: Tozoni, O.V., Candidate of Technical Sciences, Docent

TITLE: An Electrical Integrator for Modelling a Partial Solution of Poisson's Equation

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1961, No.3, pp.3-16

TEXT: Calculations on static fields often involve solution of the equation

$$\Delta\varphi = f(x, y) \qquad (1)$$

Usually, the density of field sources $f(x,y)$ differs from zero only in a limited region which usually corresponds to the boundary of separation between two different media which govern the boundary conditions. In some cases the right hand side of Eq.(1) is known and the problem simply consists in solving the boundary problem for Poisson's equations. In other equations $\varphi(x,y)$ corresponds to a more complicated differential equation but in this case too a result can sometimes be reached by solving a series of boundary problems for Poisson's equation. Functions which are a solution of boundary problems for Poisson's equation can, of course, be

Card 1/10

An Electrical Integrator for ...

represented in the form of sums of the harmonic function $\varphi_1(x,y)$, which is defined within the given region by the boundary conditions and of the function $\varphi_2(x,y)$ which is defined over the whole plane only by the distribution of the sources $f(x,y)$. Functions $\varphi_2(x,y)$ are termed a partial solution of Poisson's equation. In the general case, analytical solution of the boundary problem of Poisson's equation is complicated, laborious and inaccurate. It is accordingly of interest to develop a device for modelling a solution of these problems. It is impossible to develop a universal model and it is difficult and expensive to develop a separate model for each particular problem. It accordingly seemed rational to solve the boundary problem in an integrated way combining analytical calculation with modelling of the more complicated and laborious mathematical operations. Accordingly, the article describes a device that models the partial solution of Poisson's equation and considers its accuracy. The potential function $\varphi_2(x,y)$ which satisfies Poisson's equation on a plane is defined by the following expression

Card 2/10

a Electrical Integrator for ...

$$\varphi_2(x, y) = Im\left[\frac{-i}{2\pi}\int\int_S f(x_o, y_o)\ln(z - z_o)ds\right], \qquad (2) \qquad (2)$$

where $z_o = x_o + iy_o$ is the complex coordinate of the element ds in the region S which is filled with sources of density f(x,y) on the area of which $z = x + iy$ is integrated.
An analogous expression defines the d.c. potential field in an infinite conducting sheet of constant conductivity per unit of surface γ, if a current of density $\delta = \gamma f(x,y)$ is applied to each point of the sheet S. Consequently, the required function $\varphi_2(x,y)$ may be modelled by the potential field of a current in a conducting sheet. In order that the potential field of current in the sheet should give a partial solution for Poisson's equation, it is necessary firstly that the sheet should be uniform and infinite and secondly that the distribution of current density in the sheet should correspond to the function f(x,y) in the right hand side of Poisson's equation. Such a

S/144/61/000/003/001/004
E194/E435

An Electrical Integrator for ...

model cannot be prepared because the sheet must be limited and the source distribution must be discrete. Moreover, the sheet is not uniform where the sources are connected. The errors introduced by these imperfections are then assessed. The limited dimensions of the model are first considered. If the region containing sources is near the centre of the sheet and contains mainly sources of a single sign, a circular model may be used with a contact ring of high conductivity. It is accordingly considered that the model is made up of a uniform circular conducting sheet of radius R the centre of which, with a radius r , contains current sources connected to the sheet at particular places. A busbar of high conductivity is connected round the edge of the sheet. The greatest field distortion in the outer conductor will occur when the current sources are equal but of opposite sign and are concentrated at two diametrically opposite points on the circle. In most cases, it is required to determine not the actual function $\varphi(x,y)$ but its differential or gradient. It is much more difficult to model the gradient accurately than the function and accordingly the error is assessed in terms of gradient error. The

Card 4/10

case is considered of two sources, one positive $+\tau$ and the other negative $-\tau$ located as shown in Fig.1. The mirror image method is used to find the complex potential $W_1(z)$ of the resultant field. It is then shown how the error in the gradient depends on the ratio $r/R = K$. If, for convenience, the part of the model containing sources is made with radius $r = 15$ cm and the maximum permissible error $\delta = 3\%$, it is found that $R = 346$ cm. This is unacceptably large, particularly as the greater part of the model serves only to reduce the error. The model dimensions may be reduced to those of its working part if the outer ring is replaced by its conformal representation. Then the representation of the circle $\rho = 4r$ (Fig.2) becomes a circle of the same radius whilst the circle $\rho = R = 23r$ also becomes a circle but of radius 0.7 r. Thus the original inner circle is now represented by an outer ring and the original outer by an inner one. Now suppose that the image of both original ring and circle are made of conducting sheet. The ring is placed under the circle and they are electrically connected round the periphery $\rho = 4$ r. At the inner circle the ring is connected to a busbar of infinite conductivity. The resultant model consisting of a 2-sheet surface

S/144/61/000/003/001/004
E194/E435

An Electrical Integrator for ...

with sources given inside the circle $\rho \leq 4r$ may be considered as the region of existence of a complex potential $W(z)$ of the current field which, in the circle $\rho < 4r$ is equal to the complex potential $W_1(z)$ of the current field in the initial large circle $\rho = R$ with the same source distribution in it. A mathematical demonstration of this point is then given. It is shown that the model may be made in which the error due to the dimensions of the sheet may be as small as necessary. It suffices to make the radius of the inner ring and so the radius of the contact busbar sufficiently small. If the radius of the inner ring is made 2.5 cm this corresponds to an outer radius of R = 1440 cm. The circle and ring are made of thin uniform metal sheet (manganin 0.25 to 0.3 mm thick), they are then placed on one another and welded together round the periphery by contact spot welding. The welding points must be uniform and sufficient in number. Thin insulation is placed between the sheets. The sources are connected to the circle through holes in the ring by contact screws of small diameter. The current sources are made in the form of long rheostats of small diameter arranged in two rows round the circumference of the model. The supply unit is

An Electrical Integrator for ...

located under the model and consists of a stabiliser, a 220/5 V transformer and a selenium rectifier. The total current in the sheet is 200 A. The influence of source distribution is then considered. In the model 400 contact screws were used. In solving a particular problem the region filled with sources is applied to the circle with contact screws and current is supplied to those screws which fall within the region, the remainder being disconnected. The field in the model is distorted, firstly because the current is applied at particular places and secondly because the sheet is made non-uniform by the presence of the contact screws. The field in the model is distorted both because the current is applied at particular points and because the distribution is not exactly that required near to the measurement points. It is then shown how to select the model dimensions so as to reduce these errors to a minimum and with appropriately chosen dimensions it is shown that the error due to the discrete distribution of the sources is negligibly small. Effects due to non-uniformity of the sheet are then considered. In particular, the error is due to the inclusion of contact screws in the upper ring of the model. The conductivity per unit surface of the contact

screw is considered to be very much greater than the conductivity of the sheet and it is shown that with appropriate design the maximum error will be 1.5%. On the basis of the analysis that is given, it is concluded that in solving particular problems the resultant error of modelling the differential of the required function does not exceed 3% of the actual value at the point of measurement. The error of modelling the function is less than that of modelling the gradient. By means of the electrical integrator, it is possible to determine not only the design function but also its conjugate in the region where it exists. For example, in calculating the magnetic field in the air gap of an electrical machine it is necessary to know the distribution of scalar magnetic potential around the contour of the steel parts with a given distribution of current density in the winding sections. The electrical potential of the current field in the model can serve as an analogue only of the vector magnetic potential which, outside the section of the winding, is a harmonic function conjugate with the scalar magnetic potential. Using a double probe such that on each section of the contour of length d the probe needles lie on the normal to the centre of the section, from

Card 8/10

each side at a distance of d/2 from the contour, it is possible to measure the increment in scalar magnetic potential on each section and so define the distribution of potential over the contour. In conclusion, it is noted that using a method of successive approximations the electrical integrator may be used to model functions which correspond to more complicated differential equations such as the equation $\Delta\varphi = \nabla^2\varphi$. There are 5 figures and 9 Soviet references.

ASSOCIATION: Vychislitel'nyy tsentr AN UkrSSR
(Computer Centre, AS UkrSSR)

SUBMITTED: January 24, 1961

Card 9/10

SOV/144-[illegible]-12-3/21

AUTHORS: Tozoni, O.V., Candidate of Technical Sciences, Dotsent, Khlebnikov, S.D. Assistant, Sinel'nikov, Ye.M., Doctor of Technical Sciences, Professor; Kolesnikov, E.V., Assistant

TITLE: An Electrointegrator for Solving Dirichlet and Neuman's Problems in a Strip

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1959, Nr 12, pp 18-25 (USSR)

ABSTRACT: Dirichlet-Neuman boundary value problems arise in the calculation of fields in linear media. Analytical and numerical methods of solution appear to be unsatisfactory in practice and simulation is therefore considered. The conventional approach has a number of disadvantages. For example, in Fig 1 a harmonic function is modelled by the potential V of the current field in a conducting sheet. The potential and its gradient are measured with the probes and potentiometer. The sheet is usually metallic, with an insufficiently high surface resistivity. A better method is that of Fig 2 in which the harmonic function is represented by current. The current itself is measured by a special magnetic loop-probe connected to

Card 1/4

An Electrointegrator for Solving Dirichlet and Neuman's Problems in a Strip

a ballistic galvanometer. The current gradient is measured on a galvanometer connected to a twin-probe, using the relationship between the space-derivative of current and the time-derivative of voltage. The new method has the following disadvantages: for each new problem a special model must be made by skilled effort, high accuracy demands careful setting of the boundary values and this requires precision rheostats, an estimate of the accuracy in any region is difficult However, the use of conformal transformation enables these drawbacks to be avoided and a general-purpose simulator has been evolved. In 1956 a method of conformally representing a singly or doubly-connected region within an infinite strip was developed at the Novocherkasskiy Polytechnic Institute (Ref 1,2,3). The Dirichlet problem then becomes Poisson's integral (Ref 1 2). The problem is still a difficult one but the authors' development, the Electrointegrator allows a sufficiently accurate numerical solution. The electrointegrator is intended chiefly for finding at the

An Electrointegrator for Solving Dirichlet and Neuman's Problems in a Strip

strip boundary, the normal derivative of the harmonic function defined by the boundary values The modelling principle is that described above The block diagram of the electrointegrator is in Fig 3. The conducting sheet is a rectangle of manganin, 0.35 mm thick, measuring 135 x 1500 mm. Along one side of the strip current is fed in at 100 points from rheostats which can vary the current between 0.25 and 2.5 A. The ends of the strip are bonded to brass edges and fed from rheostats supplying up to 20 A The currents are monitored on a multirange plug-in ammeter. The integrator currents are derived from a six-phase bank of selenium rectifiers type CB-100.1 The transformer primary is supplied from a group of CN-250 voltage stabilizers. The line voltage may be 220 or 380 V, the output level can be 8, 10 or 12 V (on open circuit) The exploring probe has two needles spaced by the same amount as the feeding points at the strip edge. Experiment shows that measurement made at least two strip-widths from the ends of the strip differ negligibly from the infinite-strip values. The

An Electrointegrator for Solving Dirichlet and Neuman's Problems in a Strip

arrangement is intended for calculations of the fields in unsaturated machines. In the appendix the problem is solved of finding the radial component of induction in the armature of a HN 300 machine (Fig 4). Fig 5 shows the distributions of scalar magnetic potential along the rectangle for both rotor φ_2 and stator φ_1. Fig 6 is the distribution of induction along the edge of the armature under a main pole, compared with experimental findings (shown dotted). There are 6 figures, 2 tables and 4 Soviet references

ASSOCIATION: Novocherkasskiy politekhnicheskiy institut (Novocherkassk Polytechnic Institute)

SUBMITTED: July 26, 1959

TOZONI, Oleg Valentinovich, kand.tekhn.nauk, dotsent

Capability of the electric integrator to solve Dirichlet Neumann problems on a tape. Izv.vys.ucheb.zav.; elektromekh. 3 no.5:16-39 '60. (MIRA 13:7)

1. Kafedra teoreticheskoy i obshchey elektrotekhniki Novocherkasskogo politekhnicheskogo instituta.
(Boundary valve problems)
(Electronic analog computers)
(Electromechanical analogies)

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Cernik, B. Millisecond blasting method with a powerful blasting charge using fulgurite. p. 71.
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SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, no. 10, Oct. 1955, Uncl.

TOZHIN, I.

Iraq; geographic notes. Vokrug sveta no.4:33-36 Ap '54.
(MLRA 7:4)
(Iraq--Description and travel) (Description and travel--Iraq)

HUNGARY

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"Ophthalmological Side Effects of Certain Drugs With Special Attention to the Hungarian Traffic Regulations on Public Highways (KRESZ)."

Budapest, Orvosi Hetilap, Vol 107, No 33, 14 Aug 66, pages 1559-1560.

Abstract: [Authors' Hungarian summary] The conditions required for driver's license, as stated in paragraph 46 (3) of KRESZ, are described. A comparison is made between ophthalmological symptoms which can be seen in some cases of alcohol intoxication and in response to certain drugs. In the interest of accident-free traffic, informative and orientational work as well as official regulations are recommended. 2 Hungarian, 8 Western references.

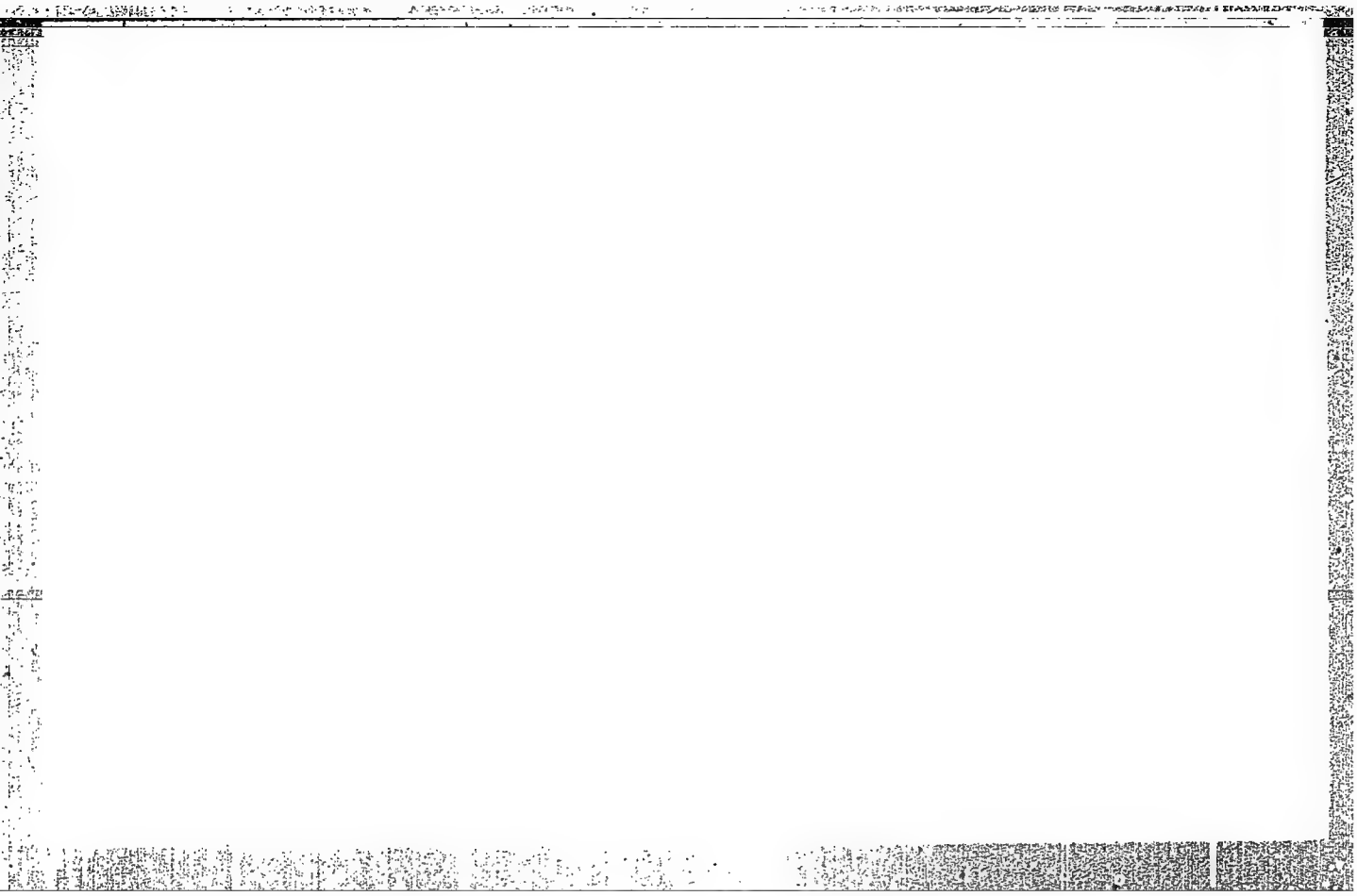
1/1

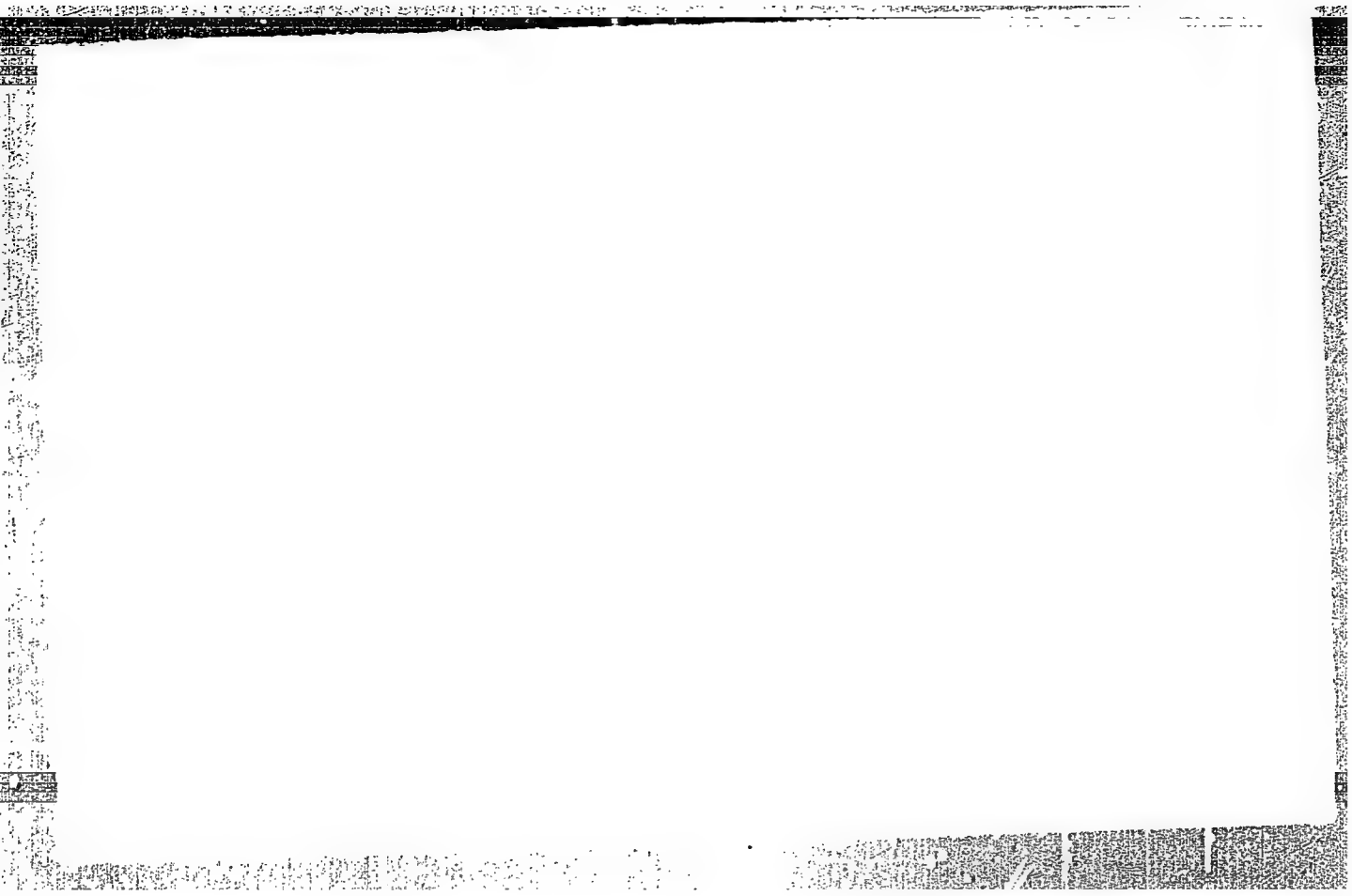
KOMAN, Andras; CZABAFY, Laszlo; Technikai segedletevel TOZSER, Olga

Experience with an automatic cell counter. Kiserl. orvostud. 13 no.6: 667-670 D '61.

1. Matrahazai Allami Tudobateggyogyintezet Laboratoriuma.

(HISTOLOGICAL TECHNIQUES)

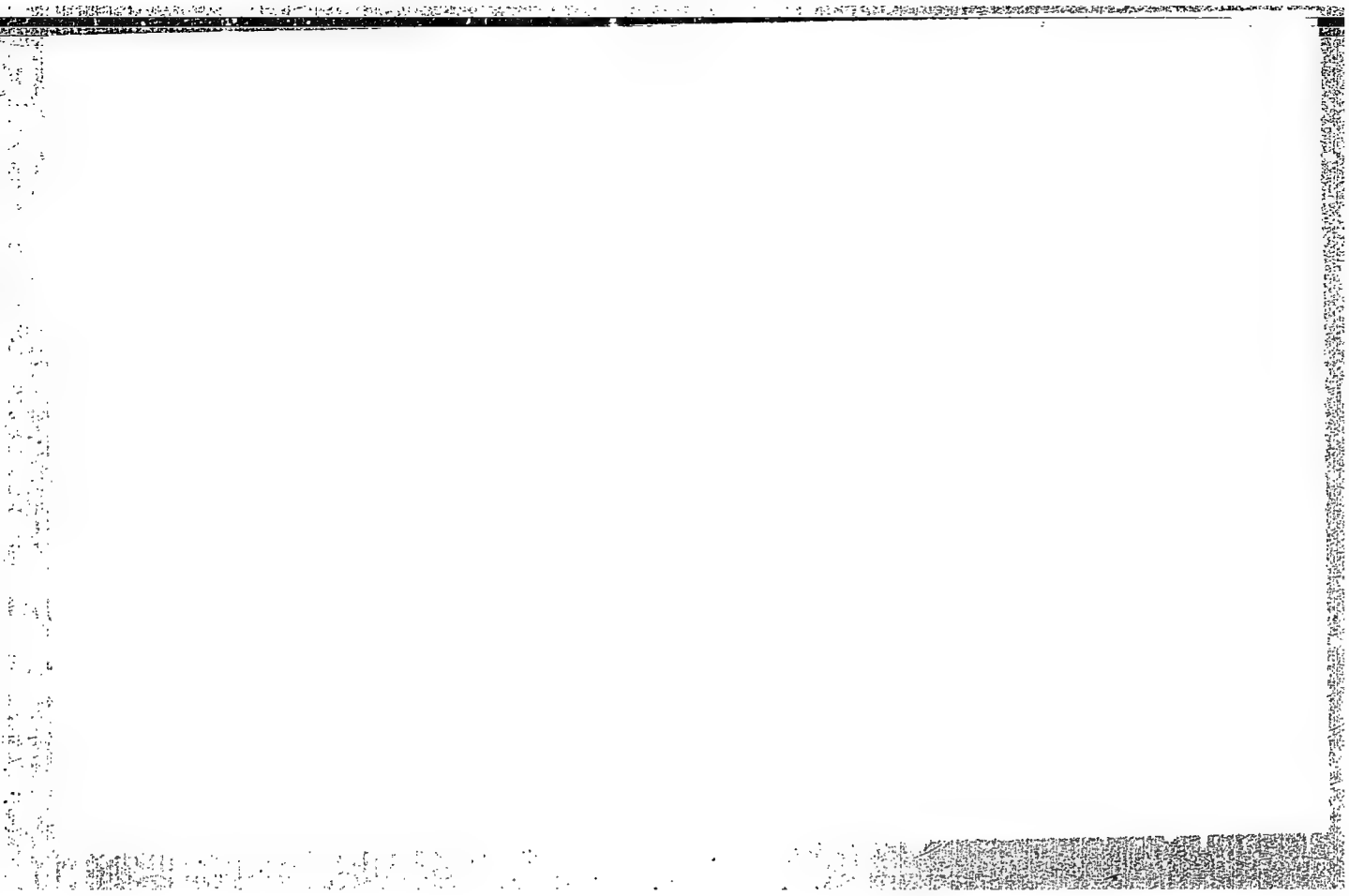




APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001756420012-3"

TRABALCA, C., ing.

Reducing the cost in glass industry. Industria usoara 3 no.6:248-250 Je '56.



APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001756420012-3"

B-8

Country : Poland
Category : Thermodynamics. Thermochemistry. Equilibria. Physico-Chemical Analysis. Phase Transitions.
Abs. Jour. : Ref Zhur - Khimiya, No 6, 1959 18434

Author : Kurtyka, Z.; Trabczynski W.
Institut. :
Title : Acetic and Propionic Acids as Azeotropic Agents in Relation to the Series of Normal Paraffin Hydrocarbons.
Orig Pub. : Roczn. chem., 1958, 32, No 3, 623-635

Abstract : The ebulliometric method was used to determine composition and boiling point of 2-component azeotropic mixtures consisting of acetic (I) or propionic acid (II) and a normal paraffin hydrocarbon containing n carbon atoms (H_n). Azeotropic range comprises in the case of I, H_n with n = 6-11, and in the case of II -- those with n = 7-10. Boiling point isobars of both azeotropic series under study are level over wide concentration range. Results of ebulliometric determinations were used to calculate the coefficient of activity of the components of azeotropic mixtures, by means of the formula: $\gamma_i = p/p_i$, where p--normal pressure (760 mm Hg), p_i--vapor pressure of pure components at the
Card: 1/2

Country : Poland B-8
Category : Thermodynamics. Thermochemistry. Equilibria. Physico-Chemical Analysis. Phase Transitions.
Abs. Jour. : Ref Zhur-Khimiya, No 6, 1959 18434

Author :
Institut. :
Title :

Orig. Pub. :

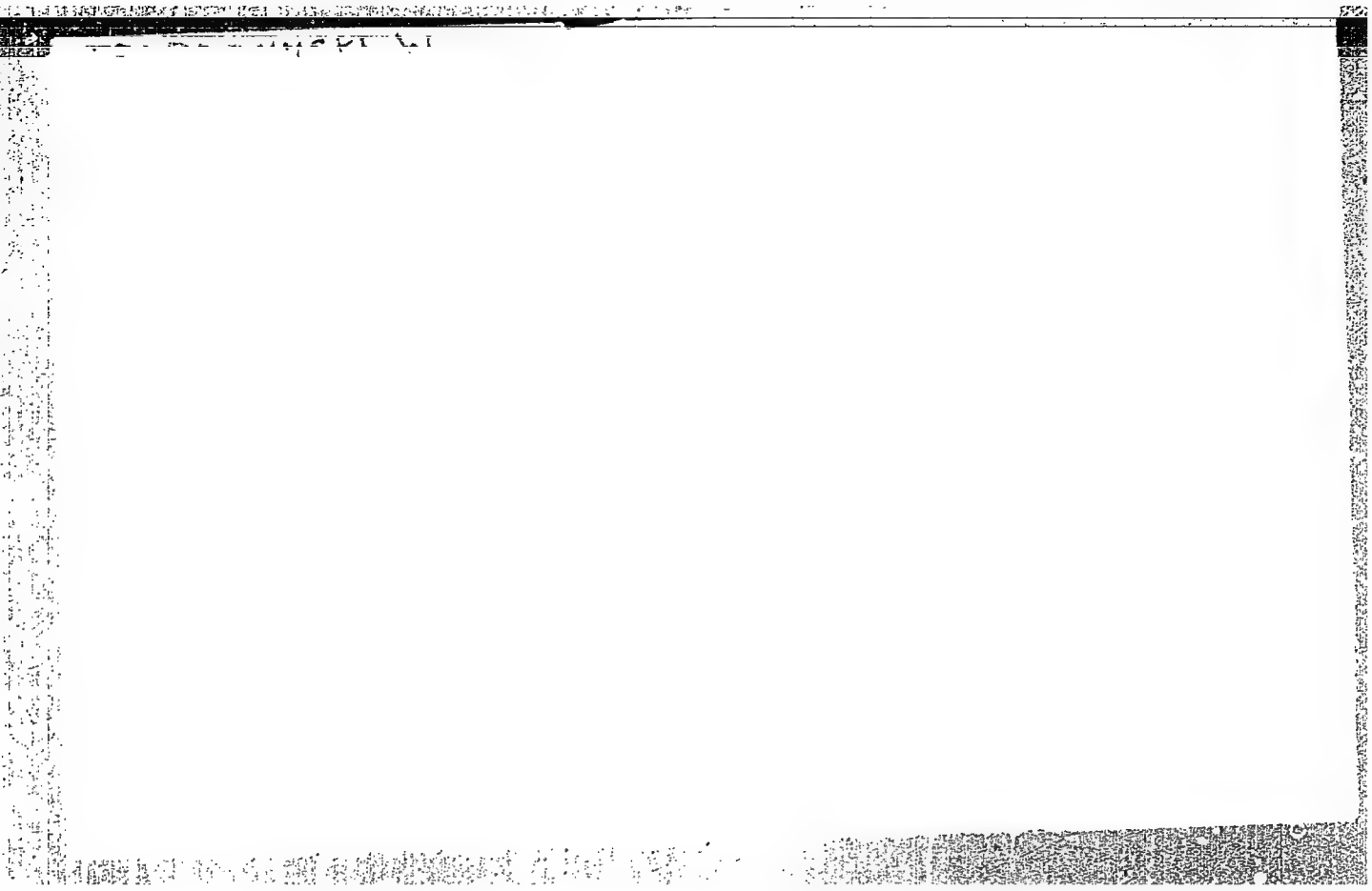
Abstract : boiling point of corresponding azeotropic mixtures. p_i was calculated according to Antoine formula using the constants of Dreisbach (Dreisbach R.R., Pressure-Vol-Temperature Relationship of Organic Compounds. Ed.3, Ohio, 1952). By graphic extrapolation were determined the boiling points of hypothetic H_n, which, as the firsts members of the series, would form tangential azeotropes with I and II, and also the azeotropic limits of these extreme homologues: 57° for I and 49° for II. -- B. Kaplan.

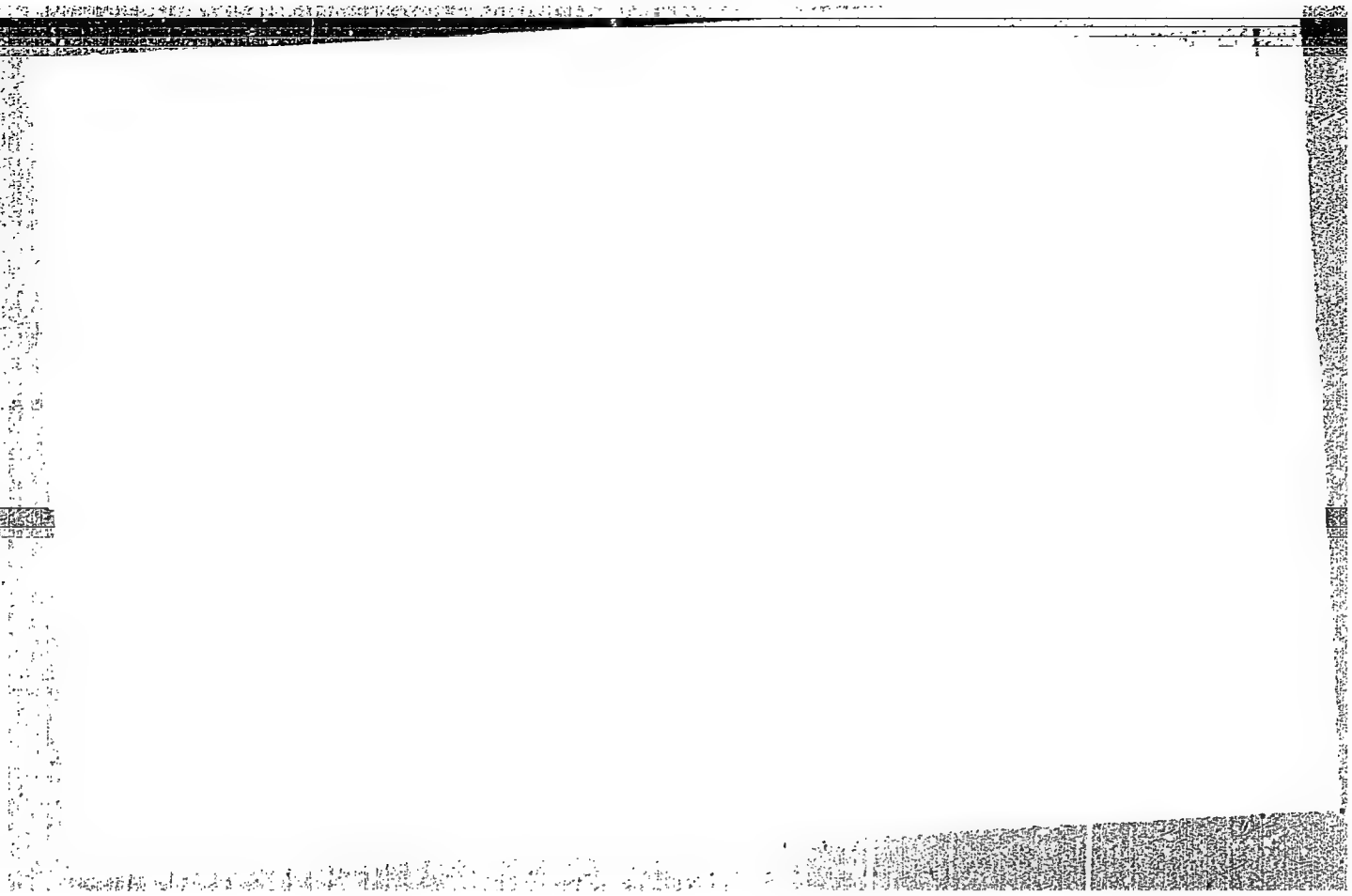
Card: 2/2

[illegible]

Location of [illegible] points in the series of [illegible] forms. [illegible] propionic acid, [illegible]picoline and n-paraffins. Bul [illegible] PAN [illegible] no.5:335-34[illegible] '64.

1. Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, and Central Office of Weights and Measures, Warsaw. Presented by W. [illegible].





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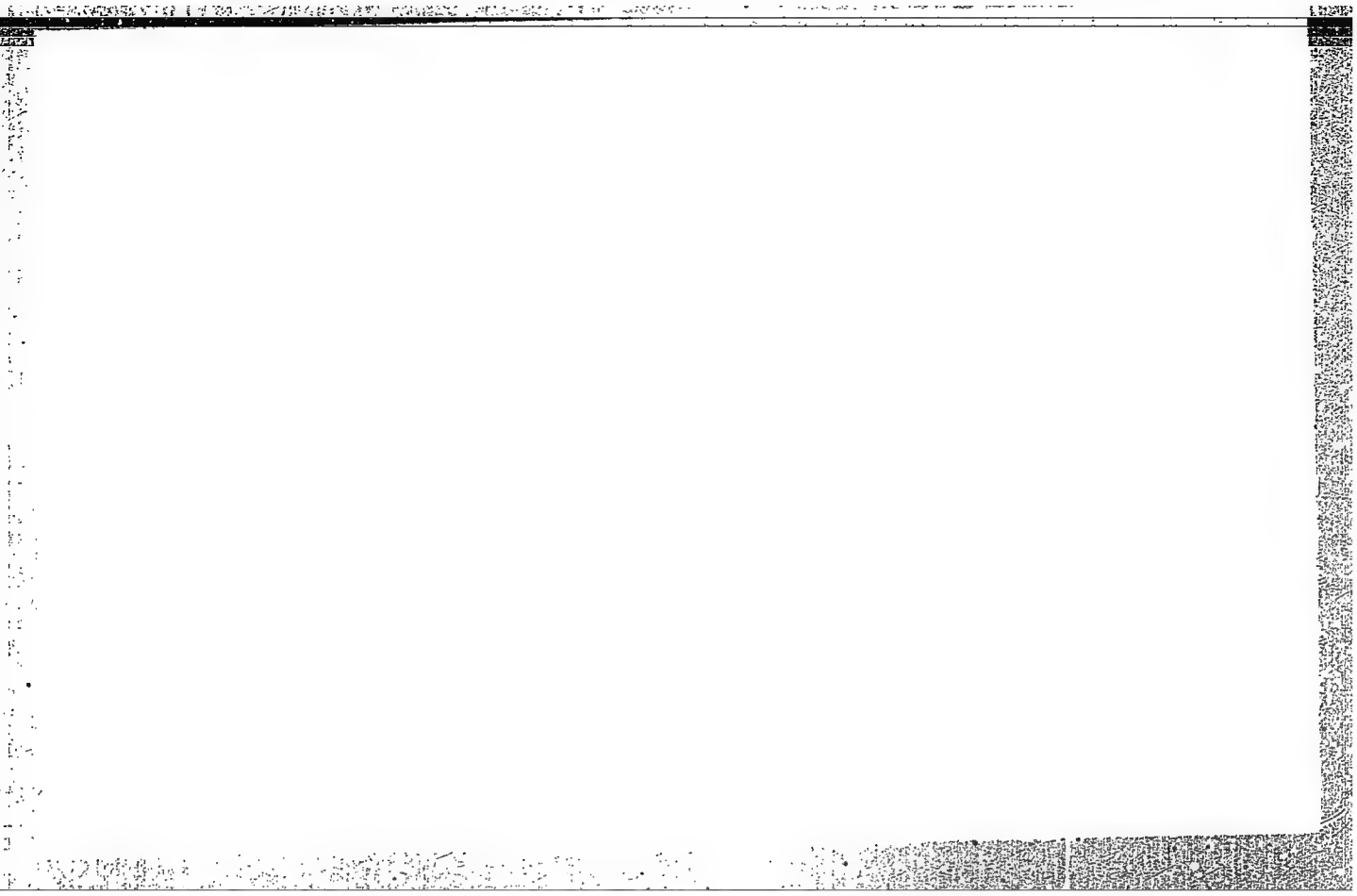


APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001756420012-3"

Distillation anomalies observed in mixtures of components forming ternary positive-negative azeotropes and zeotropes I. W. Świętosławski and W. Trąbczyński. *Bull. acad. polon. sci., Classe III* 3, 3xx-4(1955)(in English).—The recently investigated (cf. Ewell and Welch, *C.A.* 40, 794[1]) new group of ternary, pos.-neg. azeotropes contg. AcOH, pyridine, and octane, showed distn. anomalies similar to those found for a known saddle azeotrope composed of $CHCl_3$, acetone, and MeOH (cf. Ewell and Welch, *loc. cit.*, Świętosławski, *C.A.* 48, 1753b). K E H

CH

(1)

3

TRABCZYNSKI, W.

Rectification of ternary mixtures of components forming saddle systems characterized by fading top-ridge line. Bul chim PAN 8 no.8:433-436 '60. (EEAI 10:9/10)

1. Department of Physical Chemistry, University, Warsaw. Presented by W. Swietoslawski.

(Mixtures) (Systems(Chemistry))

TRABCZYNSKI, W.

On some details of abnormal rectification phenomena associated with the shape of the top-ridge line of saddle systems. Bul chim PAN 8 no.9:497-502 '60.

1. Department of Physical Chemistry, University, Warsaw. Presented by W. Swietoslawski.

(Systems(Chemistry))

TRABCZYNSKI, W.

On rectification of ternary mixtures belonging to the saddle system composed of acetic acid, 2,6-lutidine and n- nonane. Bul chim PAN 8 no.9:503-509 '60.

1. Department of Physical Chemistry, University, Warsaw. Presented by W. Swietoslawski.

(Mixtures) (Systems(Chemistry)) (Acetic acid)
(Lutidine) (Noname)

Distr: 4E2c(j)/4E3d

6
2 May

Acetic and propionic acid as azeotropic agents with respect to the series of normal aliphatic hydrocarbons. Zdzisław Kurtyka and Wojciech Trąbczyński (Univ. Warsaw). *Roczniki Chem.* 32, 623-30(1958)(English summary). —The b.p. isobars of binary systems formed by AcOH (I) or $MeCH_2CO_2H$ (II) with hexane (III), heptane (IV), octane (V), nonane (VI), decane (VII), and undecane (VIII) were detd. by the ebulliometric method. The following azeotropes were found (b.p. of the azeotrope and mole-% of I or II, resp. given): I-III 68.05°, 9.2; I-IV 91.72°, 45.1, I-V 105.70°, 68.20; I-VI 112.80°, 82.60; I-VII 116.75°, 92.65; I-VIII 117.89°, 97.60; II-IV 97.82°, 2.7; II-V 120.89°, 29.7; II-VI 134.27°, 67.0 and II-VII 139.76°, 88.8. III and VIII are the lowest and the highest boiling *n*-paraffins forming azeotropes with I. II does not form azeotropes with III and VIII, having therefore a smaller azeotropic range than I. Activity coeffs. of the components at the azeotropic points were calcd. and used to estimate the lower portions of azeotropic ranges of I or II with respect to *n*-aliphatic hydrocarbons. They are equal to 57 and 49°, resp. A. Kręglewski

TRABCZYNSKI, Zbigniew

Effect of occupational activities on hearing in telephone operators. Otolar polska 15 no.3:315-325 '61.

1. Z Kliniki Otolaryngologicznej AM w Lublinie Kierownik: prof. dr med. B. Dylewski i ze Szpitala Miejskiego w Chemie Lubelskim Dyrektor: lek. med. B. Pozniak.

(HEARING TESTS) (OCCUPATIONS AND PROFESSIONS)

TRABCZYNSKI, Zbigniew.

Apparatus for ligation of bleeding vessels in tonsillar niches.
Otolar. polska 9 no.3:281-282 1955.
(TONSILS, surgery,
appar. for ligation of bleeding vessels in tonsillar niches)

SARKITS, V.B.; TRABER, D.G.; MUKHLENOV, I.P.

Mixing of gas and the character of motion of the solid phase in the suspended layer. Zhur.prikl.khim. 35 no.10:2213-2219 O '62. (MIRA 15:12)

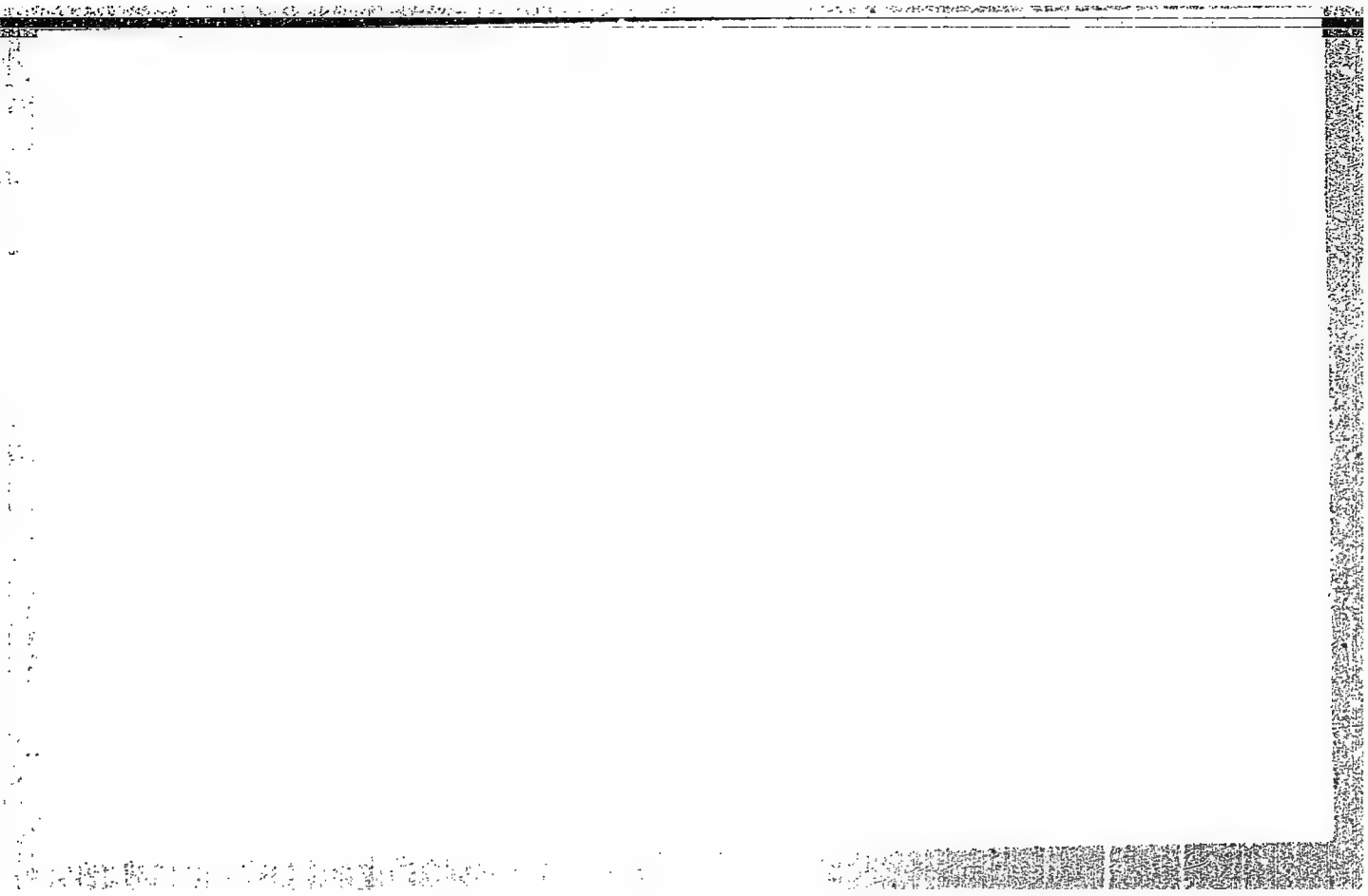
1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta. (Fluidization)

CA TRABER, D. G.

Influence of iron sulfates on vanadium catalysts in the production of contact sulfuric acid. I. G. Lesokhin, D. G. Traber, and I. P. Mukhlenov (Leningrad Tekhnol. Inst.). *Zhur. Prikład. Khim.* (J. Applied Chem.) 23, 345-9(1950).—Mech. deposition of $FeSO_4$, up to 7%, on the catalyst causes some lowering of its activity only at 450°, none at 485 and 500°. The formation of rinds at points of contact of the catalyst with the heat-exchange pipes is due to condensation of H_2SO_4 which, at lower temps., dissolves the active components of the catalyst. At higher temps., H_2SO_4 evaps. and leaves a solid rind of catalyst granules cemented by sulfates. If $FeSO_4$ or $Fe_2(SO_4)_3$ is incorporated into the catalyst at its prepn., its activity is lowered proportionally to the Fe content. The poisoning coeff. α, defined by $\alpha = (2.303/g) \log (k/k')$, where g = g. $FeSO_4$/l. catalyst, k and k' the reaction rate consts. without and with Fe, is 0.032 at 450° and 0.010 at 485°. N. Thon

KOPYLEV, B.A., TRABER, D.G.; SYCHEV, M.M.; GRIGOR, V.A.

[Manual of practical problems in general chemical technology] Rukovodstvo k prakticheskim zaniatiiam po obshchei khimicheskoi tekhnologii. Leningrad, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1953. 315 p. (MLRA 7:7)
(Chemistry, Technical)



APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001756420012-3"

MUKHLENOV, I.P., kandidat tekhnicheskikh nauk; TRAHER, D.G., kandidat tekhnicheskikh nauk; RUMYANTSEVA, Ye.S. [redacted]

Using a suspended layer of the catalyst in the oxidation of sulfur dioxide. Khim.prom. no.8:457-460 D '55. (MLRA 9:5)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Sulfur dioxide) (Catalysts)

KOPYLEV, B.A.; TRABER, D.G.; SYCHEV, M.M.; GRIGOR, V.A.; REYKHSFEL'D, V.O., redaktor; ERLIKH, Ye.Ya., tekhnicheskiy redaktor.

[Manual for practical work in general chemical technology] Rukovodstvo k prakticheskim zaniatiiam po obshchei khimicheskoi tekhnologii. Izd.2-oe, ispr. Leningrad, Gos.nauchno-tekhn.izd-vo khim. lit-ry, 1957. 315 p. (MLRA 10:6)
(Chemistry, Technical--Study and teaching)

MUKHLENOV, I.P.; TRABER, D.G.; RUMYANTSEVA, Ye.S.

Reply on the remarks of IAroslav Beranek and Ivan Klumpar. Khim. prom. no.1:43-44 Ja-F '57. (MLRA 10:4)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Fluidization)

KOROPAL'TSEV, Nikolay Vasil'yevich; KARPOVICH, Yuriy Vladimirovich; TRABER, D.G., kand.tekhn.nauk, red.; GRIVA, Z.I., red.; ERLIKH, Ye.Ya., tekhn.red.

[Manufacture of rubber goods by extrusion] Proizvodstvo rezinovykh izdelii metodom lit'ia pod davleniem. Pod red. D.G.Trabera. Leningrad, Gos.nauchno-tekhn.izd-vo khim.lit-ry, 1959. 162 p. (MIRA 12:10)
(Rubber industry--Equipment and supplies)

SARKITS, V.B.; TRABER, D.G.; PROTOPOPOVA, Ye.A.

Mechanism of heat transfer between the fluidized bed of granular materials and the wall. Trudy LTI no.54:14-23 '59. (MIRA 13:8)
(Fluidization) (Heat--Transmission)

S/137/60/000/007/001/013
A006/A001

Translation from: Referativnyy zhurnal, Metallurgiya, 1960, No. 7, p. 3, # 14235

AUTHORS: Mukhlenov, I. P., Traber, D. G. Sarkits, V. B.

TITLE: The Effect of Hydrodynamic Factors on the Emission of Heat From a Suspended Layer to the Heat-Exchange Surface

PERIODICAL: Tr. Leningr. tekhnol. in-ta im. Lensoveta, 1959, No. 54, pp. 24-36

TEXT: The author investigated the effect of the size of solid particles, the air velocity, and the initial height of the layer, on the coefficient of heat transfer. The mode of expansion of the suspended layer and changes in the concentration of the solid phase were determined. There are 13 references.

G. S.

Translator's note: This is the full translation of the original Russian abstract.

Card 1/1

ANOKHIN, V.N.; TRABER, D.G.; MUKHLENOV, I.P.; RUMYANTSEVA, Ye.S.

Conversion of carbon monoxide in a suspended catalyst bed. Trudy LTI no.54:37-46 '59. (MIRA 13:8)
(Carbon monoxide) (Catalysis)

TRABER, D.G.; RUMYANTSEVA, Ye.S.; MUKHLENOV, I.P.

Effect of the particle size of a vanadium catalyst in a suspended bed on its activity during the oxidation of sulfur dioxide. Trudy LTI no.54:47-52 '59. (MIRA 13:8)
(Sulfur dioxide) (Oxidation) (Catalysis)

TRABAR, D.G.; MUKHLENOV, I.P.; RUMYANTSEVA, Ye.S.

Kinetics of oxidation of sulfur dioxide in a suspended catalyst bed. Trudy LTI no.54:53-62 '59. (MIRA 13:8)
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ABSTRACT: The study deals with the relation between Nusselt criterion, and the Reynolds and Froude criteria; with the effect of the geometric parameters of the apparatus; and with the effect of the initial height of the layer in heat transfer from a fluidized catalyst layer to the heat exchange surface:

$$Nu = \varphi(Re, Fr, \frac{D}{d}, \frac{H_0}{d})$$

where D is the diameter of the heat exchange apparatus; d is the size of the catalyst particles; H_0 is the initial height of the catalyst layer. The experiments were made with BAV-type catalyst of d = 0.127 to 3.5

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mm. The apparatus and the experimental procedure have been previously described by the authors (this journal, 1959, Vol 32, Nr 6, p 1291; Tr. LIT, 1959, p 54). Values of the coefficient of heat transfer were plotted against the velocity of the air flow for various sizes of the catalyst particles, and the curves were expressed by Eq.(1)-(4). Eq. (1) and (3) described the part of the curve from the critical value of air velocity to the optimum value; Eq. (2) and (4) described the curve portion from the optimum value of air velocity to the velocity at which the catalyst particles were carried away from the apparatus. The equations for the laminar flow are:

$$Nu = 0.065 \cdot Re^{0.35} \cdot Fr^{0.37} \cdot \left(\frac{D}{d}\right)^{0.18} \cdot \left(\frac{H_0}{d}\right)^{0.45}, \quad (1)$$

$$Nu = 0.15 \cdot Re^{0.34} \cdot Fr^{0.19} \cdot \left(\frac{D}{d}\right)^{0.18} \cdot \left(\frac{H_0}{d}\right)^{0.45}, \quad (2)$$

Those for the turbulent flow are:

$$Nu = 0.14 \cdot Re^{0.85} \cdot Pr^{0.17} \cdot \left(\frac{D}{d}\right)^{0.13} \cdot \left(\frac{H_0}{d}\right)^{0.18}, \quad (3)$$

$$Nu = 0.56 \cdot Re^{1.0} \cdot Pr^{0.56} \cdot \left(\frac{D}{d}\right)^{0.13} \cdot \left(\frac{H_0}{d}\right)^{0.18}, \quad (4)$$

where

$$Nu = \frac{\alpha \cdot d}{\lambda_T}; \quad Re = \frac{w \cdot d}{\nu}; \quad Fr = \frac{g \cdot d}{w^2};$$

Here, α is the coefficient of heat transfer; d is the size of the catalyst particles; w is the linear velocity of the gas in the free cross section of the apparatus; λ_T is the thermal conductivity of the gas; ν is the kinematic viscosity of the gas; g is the free fall acceleration; D is the diameter of the apparatus; and H_0 is the initial height of the catalyst layer. The values of the numerical coefficients and exponents in Eq. (1)-(4) were determined from the